THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:

DEC 0 5 2003

Sivaramakrishna Kolachina, et al.

Docket No:

TI-34625

Serial No:

10/620,546

Conf. No:

8435

Examiner:

TBD

Art Unit:

2829

Filed:

07/16/2003

For:

FOCUSED ION BEAM ENDPOINT DETECTION USING CHARGE PULSE DETECTION

ELECTRONICS

REQUEST FOR CORRECTED FILING RECEIPT

Commissioner For Patents Filing Receipt Corrections Initial Patent Examination Division P.O. Box 1450 Alexandria, VA 22313-1450

Sir:

MAILING CERTIFICATE UNDER 37 C.F.R. §1.8(A)
I hereby certify that the above correspondence is being deposited with the U.S. Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on 12-2-03

Ann Trent

Enclosed is a copy of the Filing Receipt for United States Patent Application Serial Number 10/620,546. Please note the correction marked in red. Please correct the title to **Focused Ion Beam Endpoint Detection Using Charge Pulse Detection Electronics**. Enclosed is a copy of the declaration/oath and the first page of the specification showing the correct title.

Applicants respectfully request a corrected Filing Receipt and believe that Applicants did not cause this error and that no fee is due. However, this letter authorizes any necessary charges to the deposit account of Texas Instruments Incorporated, Account No. 20-0668.

Respectfully submitted,

Peter K. McLarty

Attorney for Applicants

Reg. No. 44,923

Texas Instruments Incorporated P.O. Box 655474, MS 3999 Dallas, TX 75265 (972) 917-4258



UNITED STATES DEPARTMENT OF COMMERCE UNITED STATES DEFARINGENT OF COMMA United States Patent and Trademark Office Address COMMISSIONER FOR PATENTS P.O. Dox 1450 Alexandria, Vinginia 22313-1450 www.capto.gov

FILING OR 371 APPL NO. ART UNIT FIL FEE REC'D ATTY, DOCKET NO **DRAWINGS** TOT CLMS IND CLMS (c) DATE 10/620,546 2829 804 5 23 3 07/16/2003 TI-34625 (1962-04800)

CONFIRMATION NO. 8435

FILING RECEIPT

OC000000011046533*

Date Mailed: 10/16/2003

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Filing Receipt Corrections, facsimile number 703-746-9195. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

Applicant(s)

23494

Sivaramakrishna Kolachina, Sugarland, TX, INDIA; Srikanth M. Perungulam, Houston, TX;

Assignment For Published Patent Application

TEXAS INSTRUMENTS INCORPORATED

P O BOX 655474, M/S 3999

DALLAS, TX 75265

Texas Instruments Incorporated, Dallas, TX;

Domestic Priority data as claimed by applicant

Foreign Applications

If Required, Foreign Filing License Granted: 10/15/2003

Projected Publication Date: 01/20/2005

Non-Publication Request: No

Early Publication Request: No

Title

Focused ion beam endpoint detection using charge plue detection electronids ECEIVED pulse OCT 2 1 2003

PATENT DEPT

LICENSE FOR FOREIGN FILING UNDER Title 35, United States Code, Section 184 Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Office of Export Administration, Department of Commerce (15 CFR 370.10 (j)); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

ATTORNEYS DOCKET NO. TI-34625 (1962-04800)

APPLICATION FOR UNITED STATES PATENT DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I declare that my residence, post office address and citizenship are as stated below next to my name; that I verily believe that I am the original, first and sole inventor if only one name is listed below, or an original, first and joint inventor if plural inventors are named below, of the subject matter which is claimed and for which a patent is sought on the invention entitled as set forth below, which is described in the attached specification; that I have reviewed and understand the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration; that no application for patent or inventor's certificate on this invention has been filed by me or my legal representatives or assigns in any country foreign to the United States of America; and that I acknowledge my duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56;

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

| TITLE OF INVENTION: FOCUSED ION BEAM ENDPOINT DETECTION USING CHARGE PULSE DETECTION ELECTRONICS | | |
|--|---|----------------------------------|
| POWER OF ATTORNEY: I HEREBY APPOINT THE FOLLOWING ATTORNEYS TO PROSECUTE THIS APPLICATION AND TRANSACT ALL BUSINESS IN THE PATENT AND TRADEMARK OFFICE CONNECTED THEREWITH | | |
| Practitioners at Customer Number: 23494 | | |
| SEND CORRESPONDENCE TO: Jacki Garner | | DIRECT TELEPHONE CALLS TO: |
| Texas Instruments Incorporated P.O. Box 655474, MS 3999 Dallas, TX 75265 | | Jacki Gamer (214) 532-9348 |
| NAME OF INVENTOR: (1) | NAME OF INVENTOR: (2) | NAME OF INVENTOR: (3) |
| Sivaramakrishna Kolachina | Srikanth M. Perungulam | |
| RESIDENCE & POST OFFICE ADDRESS: | RESIDENCE & POST OFFICE ADDRESS: | RESIDENCE & POST OFFICE ADDRESS: |
| 910 Evandale Lane, Sugarland, TX77479 | 3225 Woodland Park Drive #451 Houston, Texas 77082 | |
| COUNTRY OF CITIZENSHIP: | COUNTRY OF CITIZENSHIP | COUNTRY OF CITIZENSHIP |
| India | India | |
| SIGNATURE OF INVENTOR | SIGNATURE OF INVENTOR: | SIGNATURE OF INVENTOR: |
| The | P.M. Selenth | |
| DATE: 7/15/03 | DATE: 67/15/03 | DATE: |

FOCUSED ION BEAM ENDPOINT DETECTION USING CHARGE PULSE DETECTION ELECTRONICS

BACKGROUND

[0001] Integrated circuits, comprised of numerous circuit elements, are typically fabricated in layers on the surface of a semiconductor wafer. Many fabrication processes are repeated numerous times, constructing layer after layer until fabrication is complete. Metal layers (which typically increase in number as device complexity increases) include patterns of conductive material that are insulated from one another vertically by alternating layers of insulating material. Vertical, conductive tunnels called "vias" typically pass through insulating layers to form conductive pathways between adjacent conductive patterns.

[0002] Periodically, an electrical malfunction or design flaw is found when an integrated circuit is electrically tested. Implementing a design change can be an extensive process. Typically, among other tasks, a circuit designer may have to produce new schematics, a vendor may need to supply new masks or other fabrication supplies, and wafer fab personnel may need to implement new process flows on various equipment sets. Rather than commencing a lengthy and costly redesign process only to have the new design fail in operation, it is often preferable to modify and test a physical sample of the integrated circuit prior to formalizing the modified design.

[0003] Integrated circuit failure analysis often involves the use of several different types of equipment, or tools. One of the most versatile failure analysis tools is the focused ion beam (FIB) apparatus, which can facilitate device modification. The FIB is a tool including one or more ion columns for generating ion beams. In general, the FIB is used for performing integrated circuit repair, editing, cross-sectioning, modifications to aid microprobing of the integrated circuit, and